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A NEW *LYSIOSQUILLA* (CRUSTACEA: STOMATOPODA)
FROM THE GULF OF CALIFORNIA, WITH A
REDESCRIPTION OF *L. DECEMSPINOSA* RATHBUN

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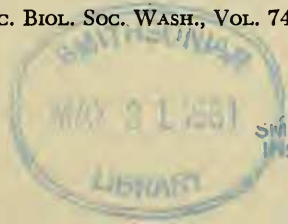
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In 1910 Rathbun briefly described a small stomatopod from Peru and placed it in the genus *Lysiosquilla*. Schmitt (1940) reported the same species from Costa Rica; he felt that the species was based on immature specimens because of the shape of the telson and the size of the animals. Neither Schmitt nor Rathbun figured the species in detail.

Since the description of *L. decemspinosa*, two other similar species have been described, *L. chilensis* Dahl, 1954, from Chile, and *L. grayi* Chace, 1958, from Massachusetts, on the Atlantic coast of America. These three species form a small, compact group within the genus *Lysiosquilla*. They can be characterized by their small size, 40 mm or less at maturity, the loosely articulated body, and the shape and spination of the telson, inasmuch as the posterior margin of the telson forms a false eave over the true marginal spines. Also, these three species lack the mandibular palp, have no papillae on the antennal protopod, and have but four epipods.

Discovery of several undescribed related species in the western Atlantic led the author to re-examine the available specimens of *L. decemspinosa* in the collections of the U. S. National Museum. During examination of other species of *Lysiosquilla* for comparative purposes, the author found that the small broken male referred to *L. digueti* Coutiere by Schmitt (1940) was actually an undescribed species, allied to *L. decemspinosa*.

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In order to clarify the status of these species within the genus, and to bring attention to their existence, a redescription of Rathbun's species and a description of the new species is here presented.

In the following discussion, the number of teeth arming the raptorial dactylus always includes the terminal tooth.

I am indebted to Fenner A. Chace, Jr., Curator, Division of Marine Invertebrates, U. S. National Museum, for providing working space in the National Museum and for the loan of comparative material.

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Lysiosquilla decemspinosa Rathbun, 1910

Figs. 1-3

Lysiosquilla decemspinosa Rathbun, 1910: 566, Pl. 53, Fig. 3; Kemp, 1913: 203 (listed only); Schmitt, 1940: 189, Fig. 20.

Material examined: 1 ♀, 23.7 mm, total length; inside beach at Capon, Peru; 30 January 1908; R. E. Coker; lectotype, USNM 40498. 1 ♂, 21.3 mm, total length; 2 ♀ ♀, 16.2-24.7 mm, total length; inside beach at Capon, Peru; 30 January 1908; R. E. Coker; paratypes, USNM 105352. 2 ♀ ♀, damaged; Isla San Lucas, Gulf of Nicoya, Costa Rica; 15 January 1930; M. Valerio; USNM 64138. 1 ♂, about 18 mm, total length; Playas Blancas, Costa Rica; 3-5 fms.; 8 February 1935; Hancock Pacific Exped., Stat. 460. USNM 81684.

Description: Eyes small, cornea globular, slightly overhanging lateral margin of stalk, not extending to end of antennular peduncle.

Antennal scale small, not as long as rostral plate, antennal protopodite lacking papillae.

Rostral plate half again broader than long; lateral margins convex and subparallel, anterior margins concave, sloping forward to an obtuse apex which is in advance of the acute anterolateral angles. Rostral plate completely covers the dorsal processes of the antennular and ophthalmic somites and the base of the eyes.

Carapace smooth, short, without carinae; gastric grooves present, cervical groove faintly indicated lateral to each gastric groove. Carapace rounded anterolaterally and posterolaterally.

Raptorial claw small; dactylus armed with 11 teeth, with a prominent notch followed by a low lobe on outer, proximal margin; propodus armed with four movable teeth on inner, proximal margin, and a row of pectinations on outer margin; dorsal ridge of carpus undivided, obscure, ending in a blunt prominence.

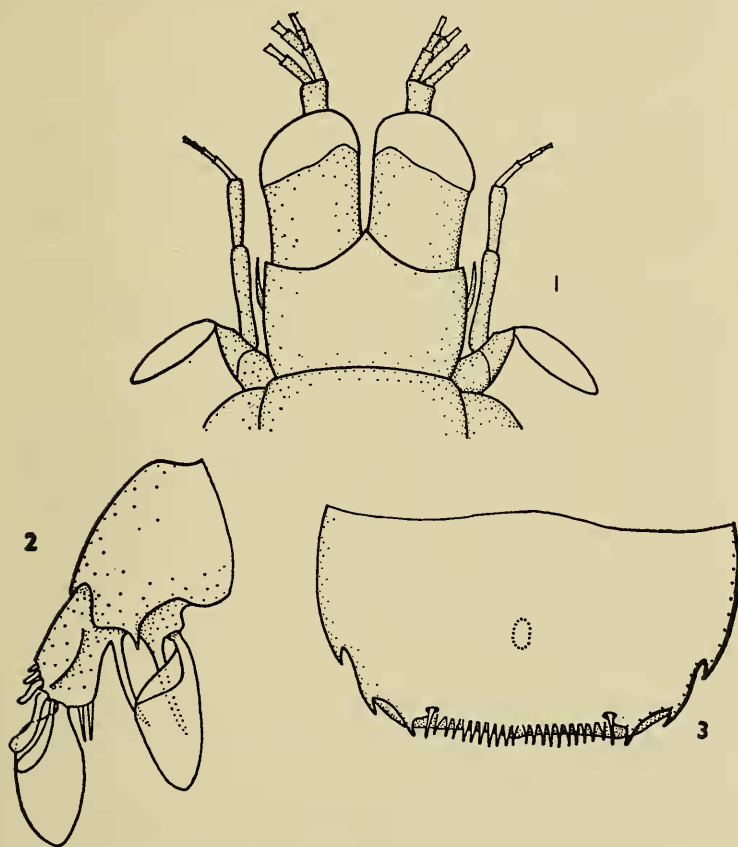
Width of propodus of fourth thoracic appendage half again as great as length; width of propodus of fifth thoracic appendage equal to length, the width of the propodus of the fifth thoracic appendage half that of

the fourth. Mandibular palp absent. Epipods present on first 4 thoracic appendages only.

Exposed thoracic somites truncate laterally, corners rounded. Inner branch of walking legs almost circular on appendages of sixth and seventh thoracic somites, ovate on the eighth somite. Copulatory tubes well-developed in the males.

Abdomen smooth, flattened, loosely articulated, not increasing in width distally.

Telson almost half again wider than long, smooth dorsally and convex in all directions; posterior false eave with a slight rounded, median



Figs. 1-3. *Lysiosquilla decemspinosa* Rathbun: Fig. 1.—Anterior portion of body of lectotype, $\times 18$. Fig. 2.—Left uropod of lectotype, $\times 18$. Fig. 3.—Ventral view of telson of female from Isla San Lucas, Costa Rica, $\times 22$.

projection, and a concave emargination on either side; tips of submarginal teeth visible dorsally. Posterior armature, on each side, consisting of a transverse row of 9–11 small, fixed submedian spines; a large, movable submedian tooth, outside of these and slightly in front of them, and 3 marginal spines. In one specimen (USNM 81684, ♂) there are two additional denticles, one between each of the lateral spines.

Basal segment of uropod with a small spine on anterior half of ventral surface; five movable, graded, spatulate spines on outer margin of penultimate segment, the last extending to the midpoint of the ultimate segment; penultimate segment also armed with two or three slender fixed spines on inner distal margin; inner branch of uropod spatulate, with anterior portion of inner margin folded over. Inner spine of basal prolongation much the longer.

Color: Almost completely faded, but with a few dark chromatophores scattered on the exposed surfaces.

Measurements: ♀ Lectotype. Total length, 23.7 mm; carapace length, 3.2 mm; rostral plate length, 1.0 mm; telson length, 1.9 mm; telson width, 2.9 mm. ♂ Paratype. Total length, ca. 22.5 mm; carapace length, 3.2 mm; rostral plate length, 1.1 mm; telson length, 1.8 mm, telson width, 2.9 mm.

L. decemspinosa can immediately be separated from *L. chilensis* and *L. grayi* by the angled anterolateral angles of the rostral plate, the smaller number of teeth on the raptorial dactylus, and the smaller number of denticles in the submedian row of the telson.

L. perpasta Hale from Australia somewhat resembles these species, but differs in the configuration and spination of the telson. The body is more compactly put together, the carapace is comparatively longer, and the rostral plate is longer than wide. Although *L. perpasta* lacks the mandibular palp, it has a full complement of epipods and has definite papillae on the antennal protopod. It possibly represents the Indo-Pacific parallel to the American group of species allied to *L. decemspinosa*.

Remarks: There is little doubt that the small specimens referred to this species are mature, as the males have the copulatory tubes well-developed. The size of the species is somewhat smaller than *L. grayi* Chace.

Discussion: There is some variation in the amount of swelling of the telson. In several of the paratypes the posterior margin is almost circular, not emarginate, as figured.

The rostral plate of the Isla San Lucas specimen has the anterolateral corners of the rostral plate less produced than in the type material.

Habitat: The type series was collected from vertical holes in the muddy sand of the inside beach at Capon; small yellow eggs were noted attached to the sides of the holes.

The Hancock specimen was taken in the middle of the bay at Playas Blancas in mud, sand, and algae at three to five fathoms.

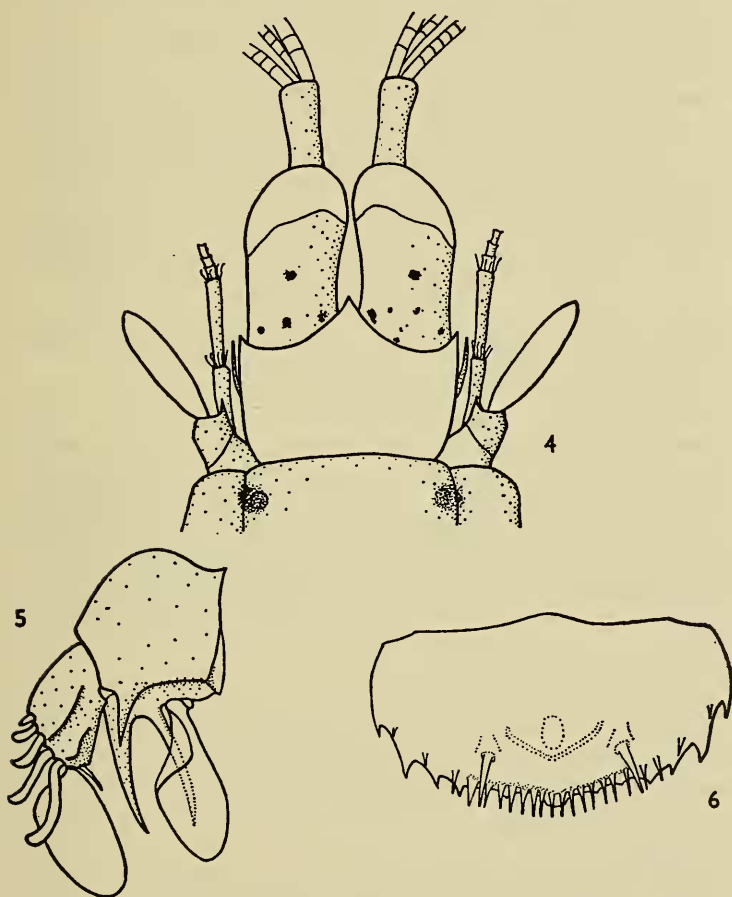
***Lysiosquilla californiensis*, new species**

Figs. 4-6

Lysiosquilla digueti Schmitt, 1940: 194 (reference to the male specimen only, Hancock Exped. Stat. 595-36).

Material examined: 1 damaged ♂, ca. 20 mm; total length; Puerto Escondido, west side of Gulf of California; 26 fms.; Hancock Exped. Stat. 595-36. Holotype USNM 76375.

Description: Eyes small, cornea subglobular, set obliquely on stalk.



Figs. 4-6. *Lysiosquilla californiensis*, new species: Fig. 4.—Anterior portion of body of holotype, $\times 20$. Fig. 5.—Left uropod of holotype, $\times 20$. Fig. 6.—Ventral view of telson of holotype, $\times 20$.

Eyes extend over the articulation of the second and third segments of the antennular peduncle.

Antennules short; bases of dorsal processes of antennular somite covered by rostral plate, although the spinous terminations of these processes are visible lateral to the rostral plate.

Rostral plate much wider than long, with anterolateral angles sharp, acute; anterior margins concave, acute apex in advance of anterolateral angles.

Carapace smooth, short, without carinae; gastric grooves distinct, cervical grooves much reduced, visible lateral to each gastric groove. Posterolateral angles broadly rounded.

Antennal scale small, not as long as rostral plate; papillae not present on antennal protopod.

Raptorial claw small; dactylus armed with eight teeth on inner margin, outer margin with a deep notch at base followed by a broad lobe. Propodus with four movable teeth, second much the smallest, on inner proximal margin, and a row of pectinations on upper margin. Dorsal ridge of carpus ending in a strong tooth.

Propodus of fourth thoracic appendage about twice as broad as that of the third and almost three times as broad as that of the fifth. Epipods present on first four thoracic appendages. Mandibular palp absent.

Thoracic somites truncate laterally. Inner branch of walking legs two-segmented, almost circular on the sixth and seventh legs, more ovate on that of the eighth.

Abdomen smooth dorsally, without trace of carinae, spined only at the posterolateral corners of the sixth somite.

Telson twice as wide as long, unarmed dorsally. Posterior margin emarginate, forming a false eave overhanging the true posterior spines. There are thirteen projections on the false eave, a large median one, rounded distally, and six, smaller acute ones on either side. The posterior armature, on either side, under the false eave, consists of a row of eight sharp submedian denticles, a large, movable submedian tooth, mesiad and anterior to the outermost denticle, and three more immovable spines laterally. There is a raised ridge on the ventral surface posterior to and half way around the anal pore.

Basal segment of uropods with a sharp spine on the ventral surface. The two spines of the basal prolongation are subequal in length. Penultimate segment of outer branch with five, graded, movable, spatulate spines on its outer margin, the last extending to the midpoint of the ultimate segment, and one or two slender, movable spines on the inner, distal margin.

Color: The pigment is largely faded. There are several dark chromatophores on the dorsal surface of the eyestalks. Carapace with three pairs of large spots, one anteriorly, on and inside the gastric grooves, a second pair posterior to these on the lateral plates, and a third pair in the region of the cervical groove. Thoracic somites and abdomen with

paired pigment spots on each somite, with a larger spot at the posterolateral angle of the fifth abdominal somite.

Measurements: Holotype. Total length, ca. 20 mm; carapace length, 2.8 mm; rostral plate length, 1.1 mm; telson length, 1.2 mm; telson width, 2.4 mm.

Discussion: *L. californiensis* is very closely related to *L. decemspinosa* and its allies. It can be distinguished from them by the almost spinous anterolateral angles of the rostral plate and the large number of projections of the false eave of the telson.

The absence of dorsal spines on the telson distinguishes these species from *L. digueti* and its Atlantic counterpart, *L. biminiensis* Bigelow.

Schmitt was misled by the configuration of the telson and size of this specimen. He felt that it was the "first littoral stage" of *L. digueti* although it is only about three mm shorter than the female of that species taken by the Hancock Expedition. He pointed out the differences between the two specimens, but attributed them to age.

Remarks: Although the specimen is broken in half, its diagnostic features are easily discernible. The second tooth on the left side of the posterior margin of the telson is more triangular and not as sharp as the remainder of the teeth.

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